Code # 994
(office use only)

NEW JERSEY

2000-2001 Guidelines and Application

BEST PRACTICES

Deadline for Application to County Office: NOVEMBER 27, 2000

The Best Practices application is a public document. The information that you provide will serve as the official record. Review the application prior to submission to ensure accuracy and adherence to the guidelines. Type or keyboard information requested on this page and page 2, if applicable.

Category Professional Development (Application is limited to one category. See page 3 for details.)
Practice Name Lesson study
Number of Schools with Practice 1 (If more than one school or district, read and complete information on page 2.)

County	Passaic
District (Proper Name)	Paterson Public Schools
Address	
Street/P. O. Box	33-35-church St.
City	Paterson,.N.J. Zip Code 07505
Telephone	Fax Email
Chief School Administrator	Dr. Edwin Duroy
Nominated School #1 (Proper Name)	Paterson Public School NO.2
Address	22 Passaic St.
Street/P. O. Box	
City	Paterson, New Jersey Zip Code 07501
Telephone	Fax (973)881-092 Email
Principal	Lynn Liptak Email lliptak 3 @ aol.com
Program Developer(s)	
Application Prepared By	Lynn Liptak
Chief School Administrator's or Charter School Lead Person's Signature	

FOR USE BY COUNTY SUPERINTENDENT OF SCHOOLS ONLY

Approved: ✓ Yes ___ No **County Superintendent's Signature**

NEW JERSEY STATE DEPARTMENT OF EDUCATION

Code # _____
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NEW JERSEY
BEST PRACTICES
2000-2001 APPLICATION

Application Requirements: Failure to comply with the procedures for submission of the application will result in the elimination of the application.

1. **RESPONSES to the information and the statements below must be ANONYMOUS and ACCURATE.** No reference should be made to the names of the district, the school(s) or community. Use the words "the school" or "the schools" in referring to the applicant in responding to the statements
2. **USE ONLY THE SPACE PROVIDED ON THE APPLICATION FORM on pages 1, 2 (if applicable), and 4.** Do not include any additional materials, as they will not be reviewed in the selection process.
3. Application must be **keyboarded on 8 ½" x 11" white paper, portrait** format. **Twelve-point or larger computer font or fourteen-pitch or larger typewritten font** must be used. (This sentence is in twelve-point Times New Roman.)
4. **KEYBOARDED RESPONSES** to all the statements below must be **no more than a total of four pages. Keyboard and number the statement followed by the response.** Format your response for accuracy and clarity.
5. **The information on page 4 and the responses** to statements must be copied **on one side of the page. The information on pages 1 and 2 (if applicable)** must be copied **on one side of the page.** Staple pages 1, 2 (if applicable), 4, and the keyboarded responses together, in that same order.
6. **The original application must be signed by the district chief school administrator or charter school lead person, indicating his/her approval.**
7. **The original and seven copies of the application** must be submitted to the county superintendent of schools by **November 27, 2000,** with the **Itemized List of District Applications** form. Keep the seven copies of each application together with the original containing the signature of the district chief school administrator or charter school lead person on the top of each set.

The following data is required to assist the panelists in the evaluation of the application:

Type of School
- X Elementary School
- ___ Middle School
- ___ Junior High School
- ___ High School
- ___ Other: _____

Grade Levels
K-8

Practice Name ~~Lesson Study~~

Number of Schools with Practice 1
Number of Districts with Practice 1
Location 1 Urban/City __ Suburban With Urban Charcteristics
__ Suburban __ Small City/Town __ Rural

Check the ONE CATEGORY into which the practice best fits.

- ___ Arts (Visual and Performing Arts)
- ___ Assessment/Evaluation
- ___ Bilingual Education and Diversity
- ___ Citizenship/Character Education
- ___ Early Childhood Education Programs
- ___ Educational Support/Guidance and Counseling Programs
- ___ Educational Technology
- ___ Gifted and Talented Programs
- ___ Health and Physical Education
- ___ Language Arts Literacy
- ___ Mathematics
- 1 Professional Development
- ___ Public Engagement (family involvement and partnerships with business, community, school districts, and/or higher education)
- ___ Safe Learning Environment
- ___ School-to-Careers/Workplace Readiness
- ___ Science
- ___ Social Studies
- ___ Special Education
- ___ World Languages

1. Describe the practice proposed for recognition, and list its objectives. Detail how the practice is innovative and how it promotes high student achievement.

2. List the specific *Core Curriculum Content Standards, including the Cross-Content Workplace Readiness Standards,** addressed by the practice and describe how the practice addresses those standard(s). Provide an example to substantiate your response.

3. Describe the educational needs of students that the practice addresses. Document the assessment measures used to determine the extent to which the objectives of the practice have been met. Provide assessments and data to show how the practice met these needs.

4. Describe how you would replicate the practice in another school and/or district.

*The 1996 edition of the ***Core Curriculum Content Standards*** published by the New Jersey State Department of Education was disseminated to all districts and charter schools and is available on line through the department's web site at http://www.state.nj.us/education.

1. Describe the practice proposed for recognition, and list its objectives. Detail how the practice is innovative and how it promotes high student achievement.

The school has done pioneering work in designing a professional development process modeled after a process which in Japan is known as lesson study. The school is in its second year of adapting the innovative process to U.S. culture and focussing it on the New Jersey Core Curriculum Content Standards for Mathematics. Unlike traditional staff development in which teachers are removed from their classrooms for a single training session led by outside experts, lesson study is an on-going process led by teachers. It occurs in the context of the classroom with the focus on student achievement.

The objectives of the process are:

- To improve classroom teaching and therefore student performance on the New Jersey Core Curriculum Content Standards for Mathematics by engaging teachers in collaborative lesson planning and assessment.
- To focus professional development on student learning as it occurs in the context of our own classrooms.
- To empower teachers to drive their professional development through inquiry into the improvement of their practice and that of their peers.

In September 1999, a Math Study Group, which had been active in the school for two years, decided to undertake the challenge of lesson study. The study group is composed of 16 educators at the school, including classroom teachers and the principal and vice principal. Recognizing the need for the assistance of what Richard Elmore of Harvard University calls "knowledgeable others," the study group focussed its existing partnership with the Mid-Atlantic Eisenhower Consortium on lesson study and developed a collaborative relationship with Columbia University Teachers College. Dr. Makoto Yoshida, who had done extensive ethnographic study of the lesson study process as it occurs in Japan, served as an advisor to the group. With his assistance, the school formed a partnership with the Greenwich Japanese School in Greenwich, Connecticut, where lesson study was routinely conducted. Groups of educators from both schools visited each other frequently. The Math Study Group at the school was able to observe lesson study and then conducted the process with adaptations to the U.S. culture.

The school began the process with discussions of the New Jersey Core Curriculum Content Standards for mathematics and the standards of the National Council of Teachers of Mathematics, and how lesson study could help the school develop its practice in the directions recommended by both documents. The components of a good mathematics lesson were discussed and described in detail. General themes related to the standards were selected to guide the process. The themes selected were: that students would develop a deep understanding of mathematical concepts, not simply memorize procedures; students would communicate their mathematical ideas and thinking; and that students would work cooperatively and exchange ideas about the mathematics of the lessons.

The Math Study Group then worked in four teams of four educators to develop specific lessons which would embody the standards. The detailed lesson plans developed included "anticipated student responses," and lead us to focus on student thinking at a deeper level than we had before. Each lesson was then taught to a group of students with several adult observers. Each lesson was videotaped, carefully critiqued, and then re-written based on observations. The revised lessons were then taught to second groups of students as part of a lesson study open house, which included participants from the Greenwich Japanese School, Columbia University Teachers College, and educators from across the country.

Our own reflection and the critiques of others helped us examine in depth, and in the context of our own classrooms, more powerful ways to teach mathematics, so that students would acquire the deep mathematical understanding outlined in the New Jersey Core Curriculum Content Standards. Lesson Study is a process for continuous, gradual improvement. The research conducted by Columbia University Teachers College, and our own observations and evaluations, lead us to believe that Lesson Study is a powerful tool for the improvement of teaching and learning as it occurs in our classrooms.

2. List the specific Core Curriculum Content Standards, including the Cross-content Workplace Readiness Standards, addressed by the practice and describe how the practice addresses those standards. Provide an example to substantiate your response.

   Although the lesson study process can be adapted to all content areas, the school decided to focus its efforts on the New Jersey Core Curriculum Content Standards for Mathematics. Specifically, the group decided to focus on the following standards:

   4.1 "All students will develop the ability to pose and solve mathematical problems in mathematics, other disciplines and everyday experiences." The lessons developed by the groups, which are available on videotape, show students working individually and then in cooperative groups on problems related to everyday experiences. For example, in a third grade lesson, students work with the problem of sharing 7 pieces of licorice evenly among the four students in their cooperative group.

   4.2 "All students will communicate mathematically through written, oral, symbolic, and visual forms of expression." The lessons developed by the groups show students presenting their solutions to problems to the class for discussion, and sharing mathematical data they have generated. For example, in the third grade lesson mentioned above, students generated various methods for solving the problem.

The four sub-groups examined the curriculum for the grade level they were addressing and selected specific progress indicators from standards 4.6 – 4.15. For example, the

group developing an eighth grade lesson selected standard 4.12 dealing with statistics and probability and focussed on student cumulative progress indicators 9, 11, 13, and 15. The eighth grade lesson began with a Monty Hall game show format. Students were presented with a game situation in which they were to choose among 3 doors, two of which had broccoli behind them and one had candy. After firmly establishing the students' preference for selecting the door with the candy, and making it clear that the game show host, the teacher, knew what was behind each door, the student contestant selected a door. The game show host then opened one of the two remaining doors showing broccoli. The student is given the option to stick with his/her original selection or switch to the other unopened door. The students generated data in partners and then as a class to obtain the data that suggested the statistical probability of each option. Students shared and discussed the data, its meaning, and the mathematical concepts underlying it.

In addition to the New Jersey Core Curriculum Content Standards for Mathematics, the lessons focussed on Cross-Content Workplace Readiness Standard #3: "All students will use critical thinking, decision-making, and problem solving skills."

3. Describe the educational needs of students that the practice addresses. Document the assessment measures used to determine the extent to which the objectives of the practice have been met. Provide assessments and data to show how the practice met these needs.

The school began the process by looking at the New Jersey Core Curriculum Standards for Mathematics and recommendations for mathematics instruction from the National Council of Teachers of Mathematics. Discrepancies between the standards and the performance of our students were identified based on observations and an analysis of student performance on the ESPA, GEPA, and Stanford 9 Achievement Test. For example, we observed that our students did not communicate mathematically at the level suggested by the standards. Data from the open-ended mathematics questions on the ESPA and GEPA corroborated our classroom observations. This became one of the goals of the lesson study process.

Our overall goal was to elevate our practice to a level which would allow the students to achieve the New Jersey Core Curriculum Content Standards. We focussed on mathematics because this is an area which data from international studies, such as the Third International Math and Science Study, have found to be particularly deficient in the United States. Studies, such as the National Educational Longitudinal Study (U.S. Department of Education 1997), suggest that mathematics is a key subject for college admission, particularly for poor and minority students.

To evaluate progress in achieving our goals, both qualitative and quantitative measures have been used to assess to what extent we are improving our practice and how this is impacting student achievement. Columbia University Teachers College was enlisted to study the lesson study process as it unfolded in the school. The data suggest that teachers are collaborating on instructional planning and analysis and focussing more closely on students' mathematical thinking (anticipating their responses and understanding the

methods they develop and use). It also suggests a need to refine and deepen the level at which we critique lessons. Review of videotaped lessons and classroom observations corroborate an increasing level of student engagement in mathematical thinking. ESPA and GEPA mathematics test scores showed modest increases in the percentage of students scoring proficient or advanced proficient.

4. Describe how you would replicate the practice in another school and/or district.

In partnership with the Mid-Atlantic Eisenhower Consortium, the school has built mechanisms for sharing and disseminating lesson study. The processes for dissemination to date have included:

- Presentations at professional meetings: Sharing of the school's experience with the lesson study process has occurred at numerous professional meetings including a presentation at an Association of Mathematics Teachers of New Jersey conference (October 2000), and a professional day sponsored by the Southwestern Pennsylvania Regional Math/Science Collaborative (Pittsburgh, February 1, 2000).
- Professional publications: To disseminate the process, the school has written for professional publications such as Education Week (October 11, 2000) and has been included in publications such as Global Perspectives for Local Action: Professional Development Guide (National Research Council 1999).
- Consultation with interested groups of educators: Working directly with groups of interested educators to develop the lesson study process in their settings has been one means of dissemination of the practice. For example on July 27-28, 2000, the principal and a teacher from the school served as consultants to the North Central Regional Educational Laboratory's Ohio Lesson Study Project.
- Observation at the school of meetings and lessons: Individual and groups of educators frequently visit the school to see the process in action. This is one of the best ways for the practice to be disseminated. An example of this is a visit to the school on November 13, 2000, by a team of educators from the Lakeshore, Michigan, public schools. The team, which visited the school to observe lessons and a lesson study group meeting, included the superintendent, central office curriculum and staff development specialists, and classroom teachers. They will continue to communicate electronically with the school as they begin implementation of the process.
- Participation in lesson study open houses: Participation in the process of lesson study at an open house is a powerful means of disseminating the practice. The school has hosted two lesson study open houses to date. The most recent was conducted on May 22, 2000. Co-sponsored by the Association of Mathematics Teachers of New Jersey, educators from throughout the country, including TIMSS researchers Dr. Stigler and Dr. Hiebert, attended the open house and participated in the lesson study process.
- Web Site: A site is currently under construction to facilitate dissemination.

The school has found lesson study to be a valuable professional development tool to help educators develop the competency that is needed both in content and pedagogical knowledge to implement the New Jersey Core Curriculum Content Standards. The school is firmly committed to sharing the process with other interested educators.